

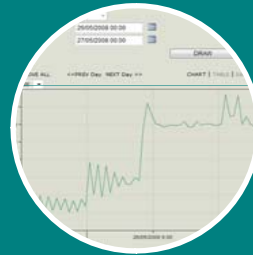


Your gate to Energy Savings

# Porta Capena



IT Consulting for  
Energy  
Management  
Integrators



Developing of  
hardware- and (web  
based) software  
products for the  
support of Energy  
Management



Product based  
installation of basic  
Energy  
Management  
Solutions for the  
low-end market



Customer specific  
development and  
integration of  
Energy  
Management  
Systems for the  
high-end market





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# IT Consulting

- Years of experience with:
  - Application-specific T&M systems (Hard- & Software)
  - Developing (Webbased) Applications
  - System/Network integration



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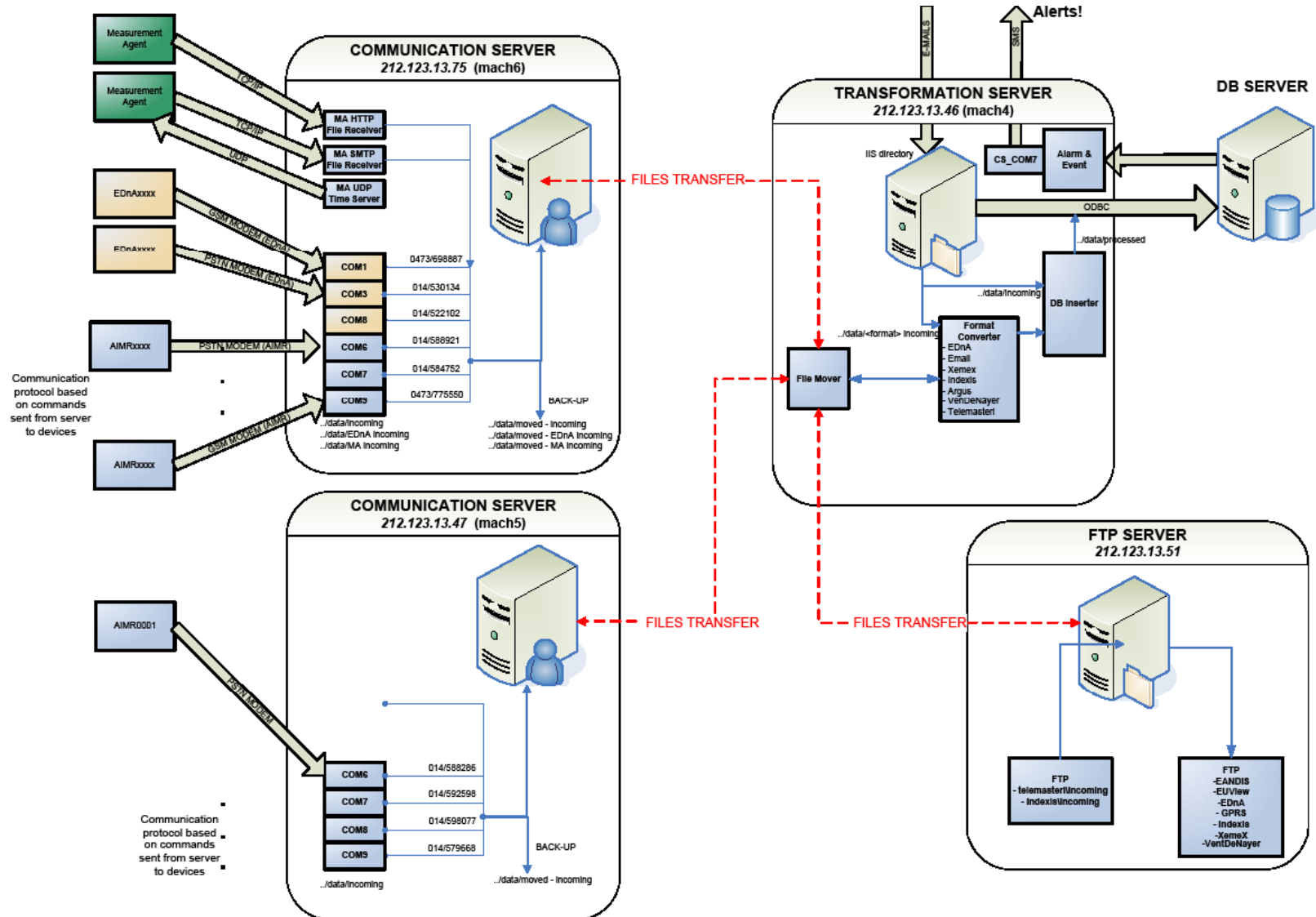
# Webbased Applications

- Case: EUView



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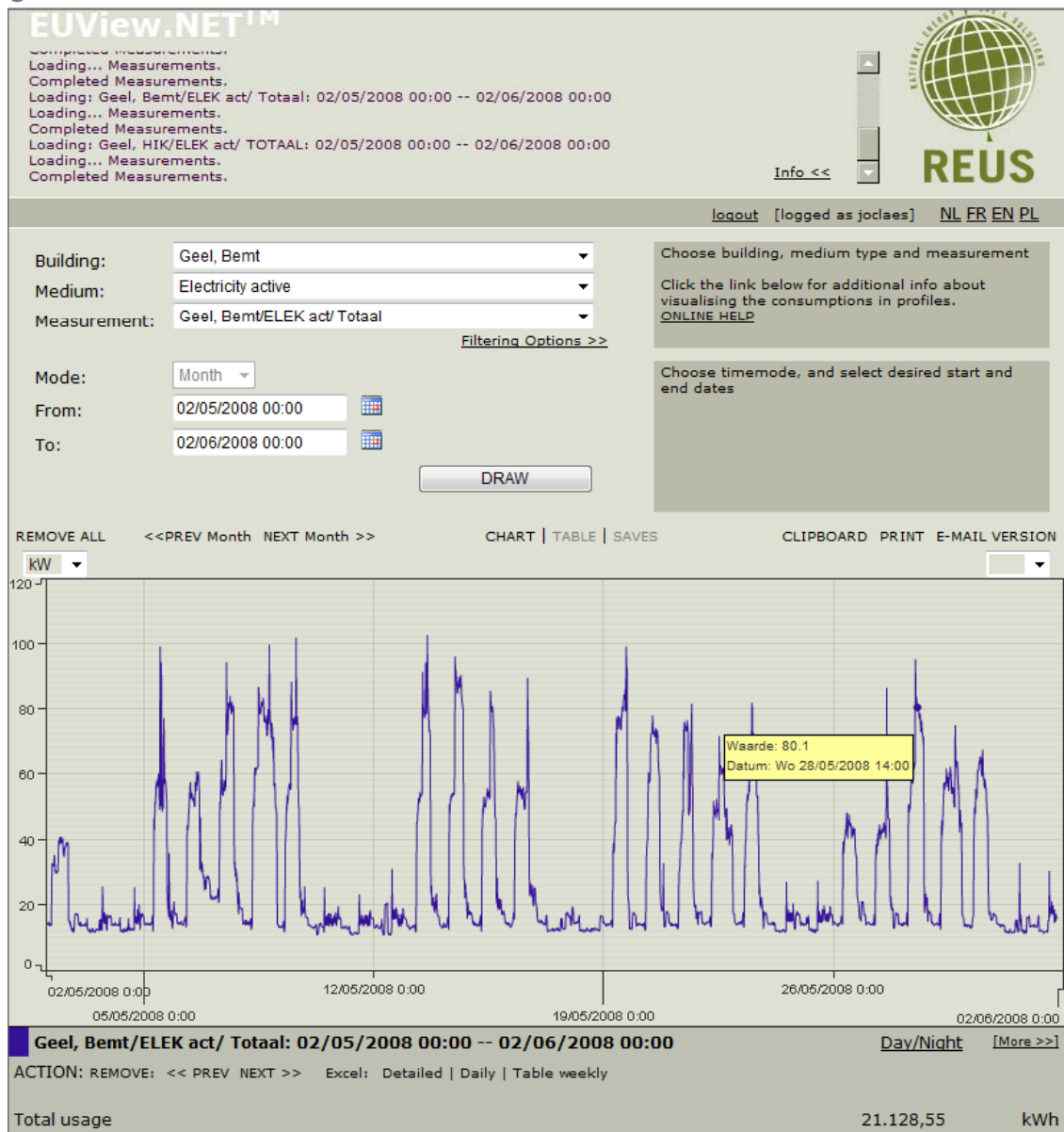
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# Products

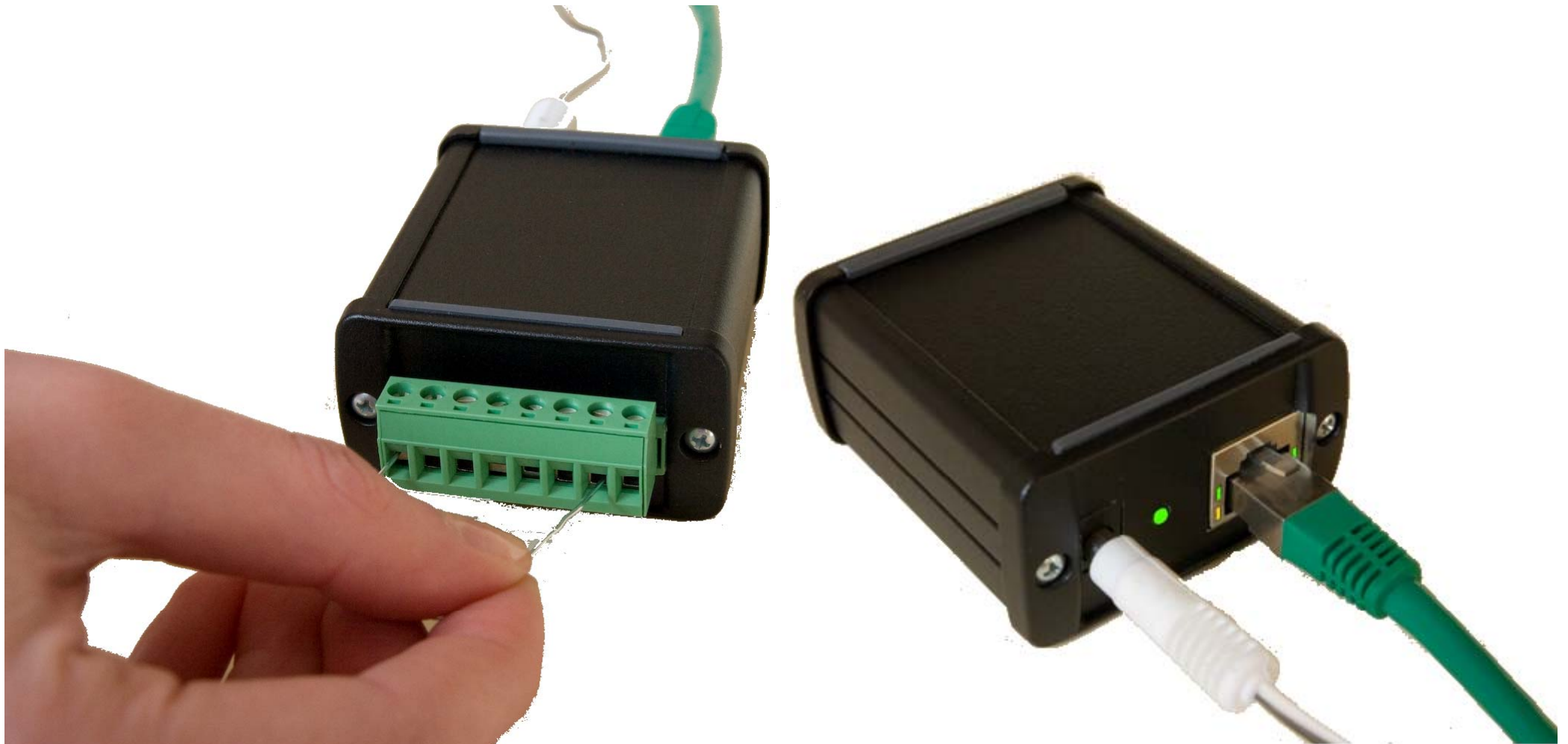
- MA Light
- Customer Website EM-Control



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# MA Light





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# MA Light

The Measurement Agent light is designed to count digital pulses from local counters, read temperature from 1-wire thermometers and send them through Ethernet to a web server or directly to a mail account



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# MA Light Specs

- 1Mbit of flash memory (4096 measurements of up to 14 media counters =>  $\pm 42$  days)
- 4 digital inputs (**0-24V** pulses counter of max. frequency 100Hz)
- 2 analog inputs (**0-5V** analog median value of one gate time cycle)
- 8 one-wire thermometers (median value of temperature in Celsius)



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# MA Light Specs

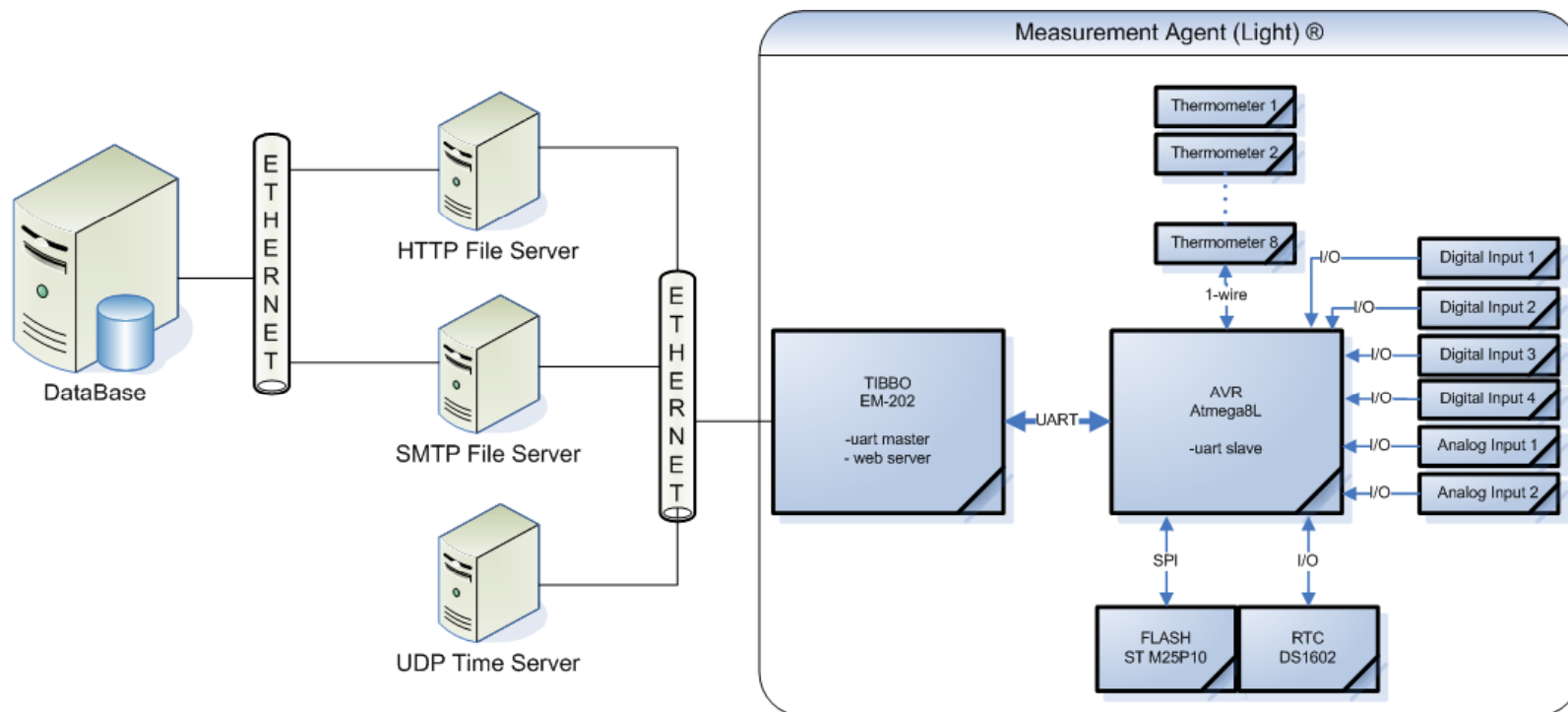
- Embedded HTTP web server
- HTTP client for sending data to EuVIEW database,
- SMTP client for sending data directly to an email account
- TIME client to retrieve and update local RTC



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# MA Light Principle





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# Embedded Webserver

<b>INFORMATION</b>  board info meters info  <b>CONFIGURATION</b>  network e-mail meters 1-wire board save & restart  SEND ALL DATA!	<b>Porta Capena</b>	
	<b>Network Configuration</b>	
	IP Configuration	<input checked="" type="radio"/> Static <input type="radio"/> DHCP
	IP address	192.168.3.100
	Netmask	255.255.255.0
	Gateway	192.168.3.1
	Enable IP Blocking:	<input type="checkbox"/>
	SMTP Server IP Address	212.160.134.132
	SMTP Server TCP Port	25
	HTTP Server IP Address	192.168.3.99
HTTP Server TCP Port	2398	
Time Server IP Address	212.123.13.75	
Time Server TCP Port	6000	
<input type="button" value="Accept"/>		



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# Email format

```
[info]
AIMR=997
Call time=3258367673
Date=2007-04-02 14:07:53
Version="MAlight v1.2"
IP="192.168.3.100"
Netmask="255.255.255.0"
Gateway="192.168.3.1"
InputNames="DI-0;DI-1;;;AI-0;AI-1;1W-0;1W-1;1W-2;1W-3;;;;;"
[data]
2007-04-02 13:33:42 3743 3258365622 30 30 2.86 2.63 25.75 25.50 25.50 26.0
2007-04-02 13:34:12 3744 3258365652 30 30 2.80 2.57 25.75 25.50 25.50 25.75
2007-04-02 13:34:42 3745 3258365682 30 30 2.18 1.97 26.0 25.50 25.75 26.0
2007-04-02 13:35:12 3746 3258365712 31 31 1.98 1.86 25.75 25.50 25.75 26.0
2007-04-02 13:35:42 3747 3258365742 29 29 2.65 2.48 25.75 25.50 25.75 26.0
2007-04-02 13:36:12 3748 3258365772 31 31 2.18 1.94 25.75 25.50 25.50 26.0
2007-04-02 13:36:42 3749 3258365802 30 30 1.86 1.77 25.75 25.50 25.50 25.75
2007-04-02 13:37:12 3750 3258365832 30 30 2.32 2.10 25.50 25.50 25.50 25.75
2007-04-02 13:37:42 3751 3258365862 30 30 1.94 1.83 25.75 25.50 25.50 25.75
2007-04-02 13:38:12 3752 3258365892 30 30 2.93 2.72 25.75 25.50 25.50 26.0
```



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# MA Light Future

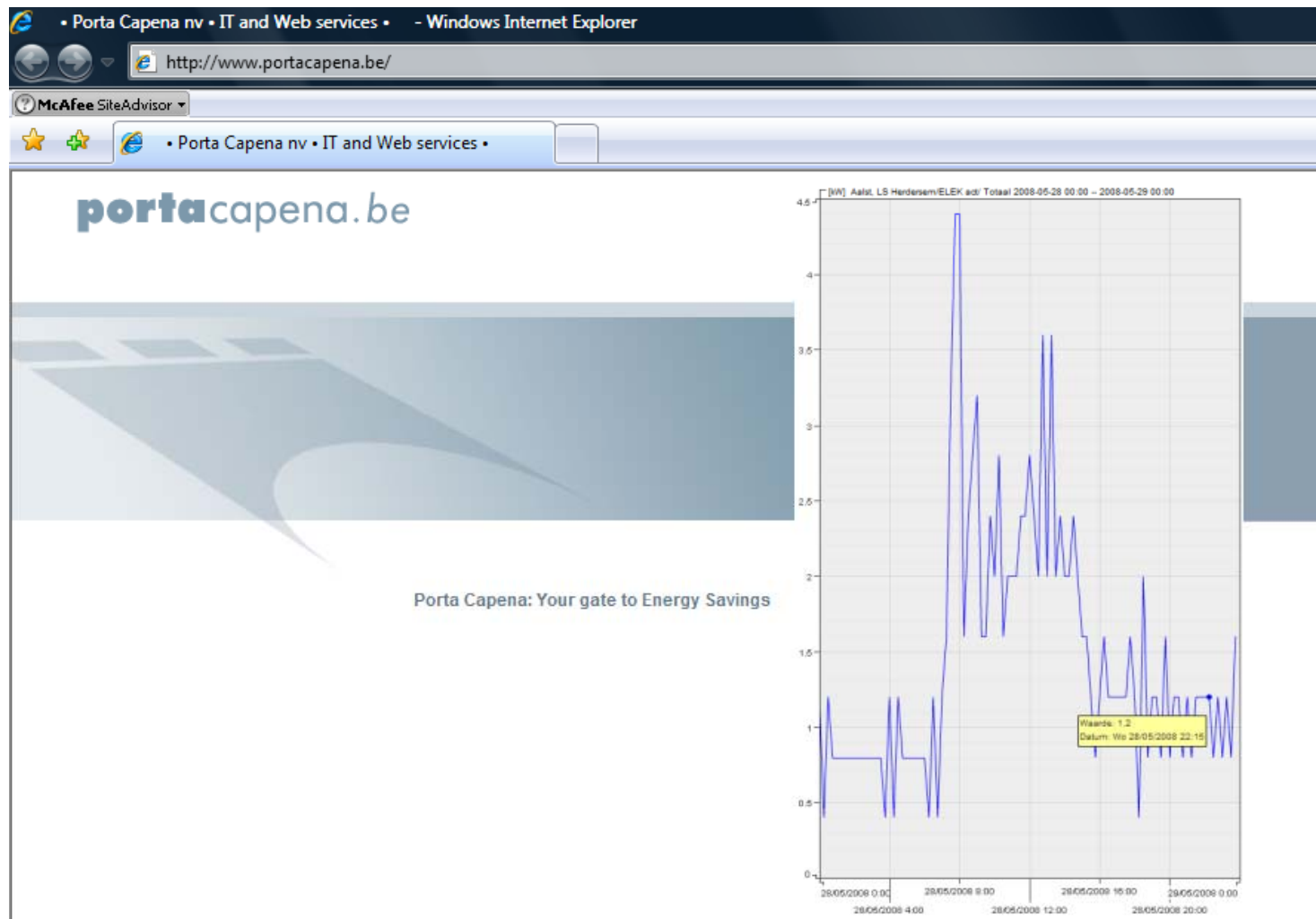
- Controlling
- Temperature measurement with PT100 and 1-wire
- Wireless
- ...



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# Customer Website EM-Control





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# YouTube like implementation

```
<script src="http://www.reus.be/open/flash/runtime/JavaScriptFlashGateway.js"
  language="javascript" type="text/javascript" ></script>
<script src="http://www.reus.be/open/IFlash.js" language="javascript"
  type="text/javascript" ></script>
<script type="text/javascript">
  var chartSwf = new FlashTag("/flash/GRLineChart.swf", "100%", "100%",
    "7,0,14,0")
  chartSwf.setFlashvars("lclId=" + lclId)
  chartSwf.write(document)
</script>
<input type="hidden" value="put-your-guid-here" id="guid" name="guid" />
```



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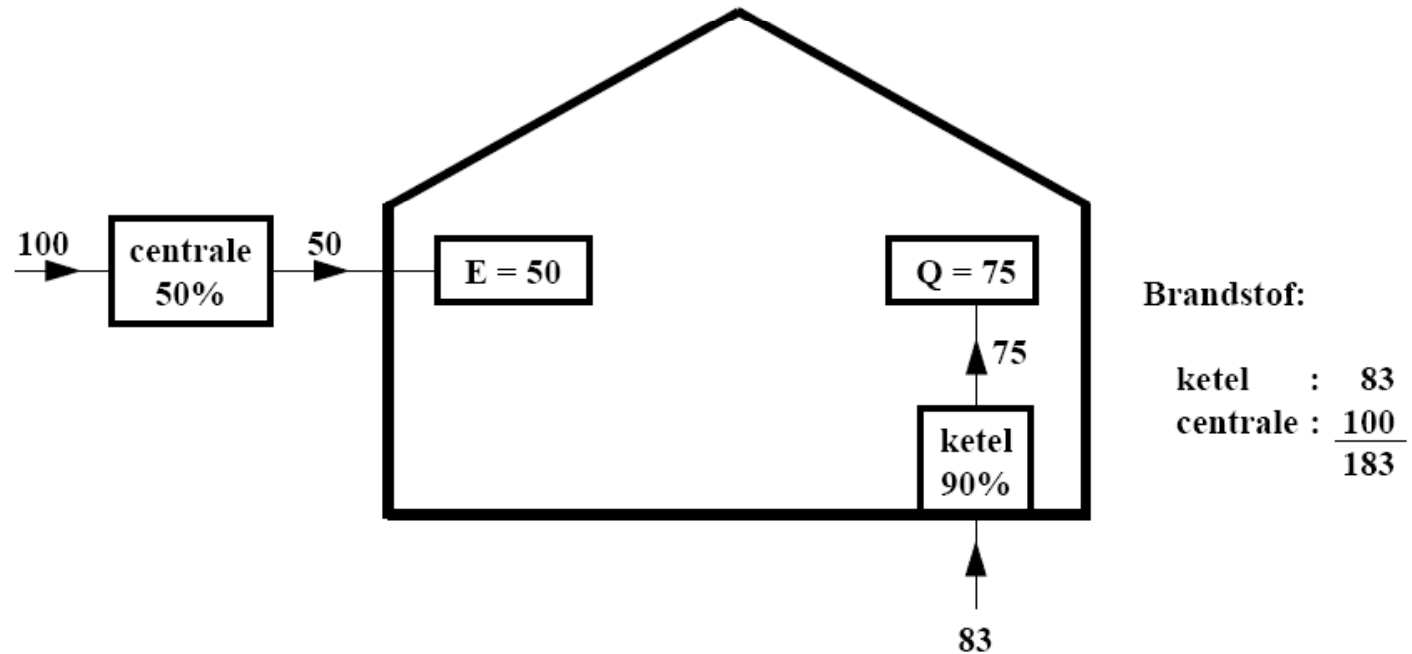
# Customer Specific Development

- Case:  
Combined Heat & Power Production  
(CHP)



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# Combined Heat and Power

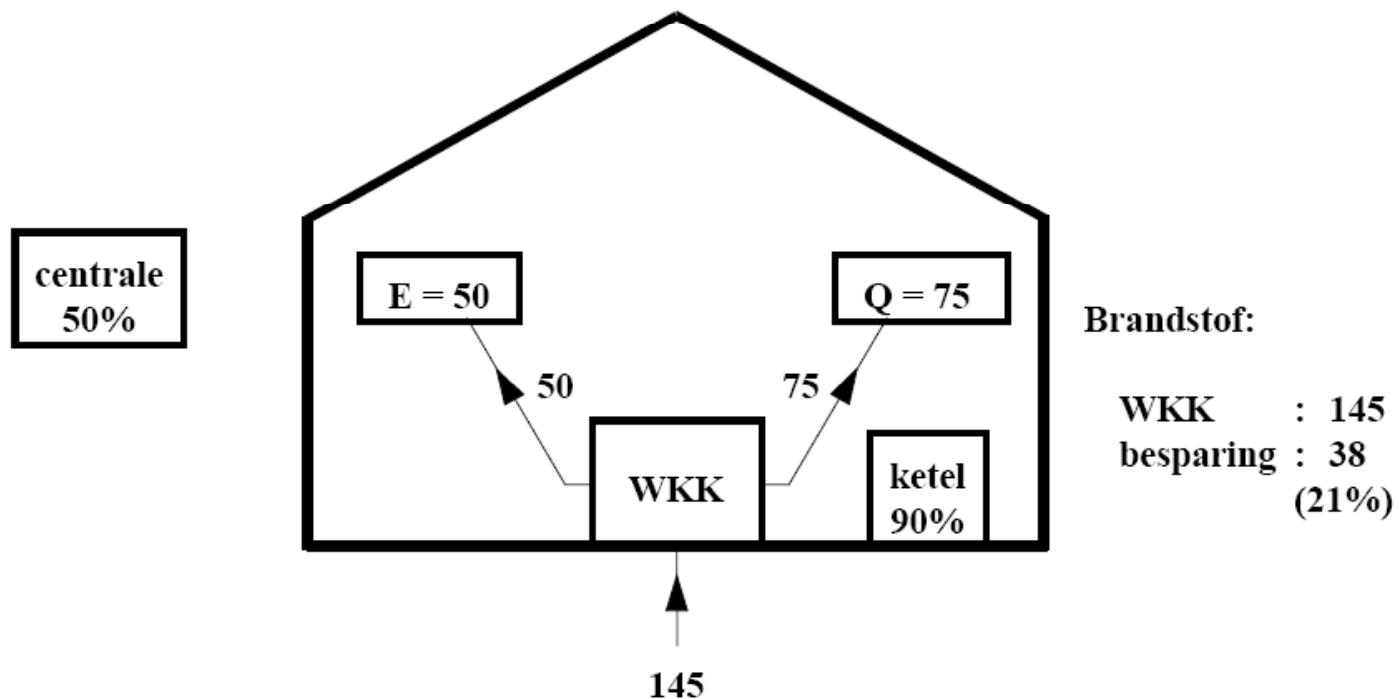




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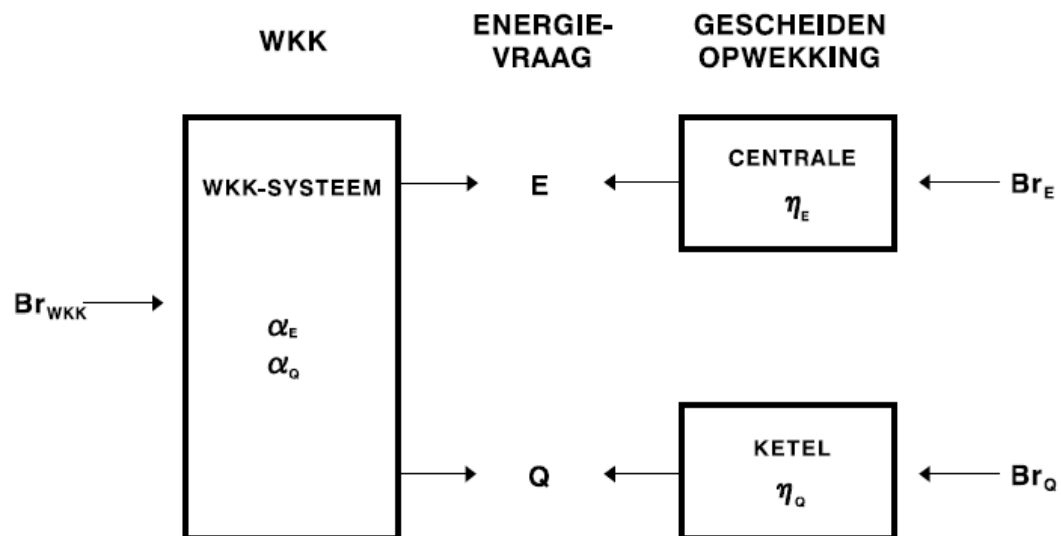
# CHP





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$$Br_{WKK} < Br_E + Br_Q$$

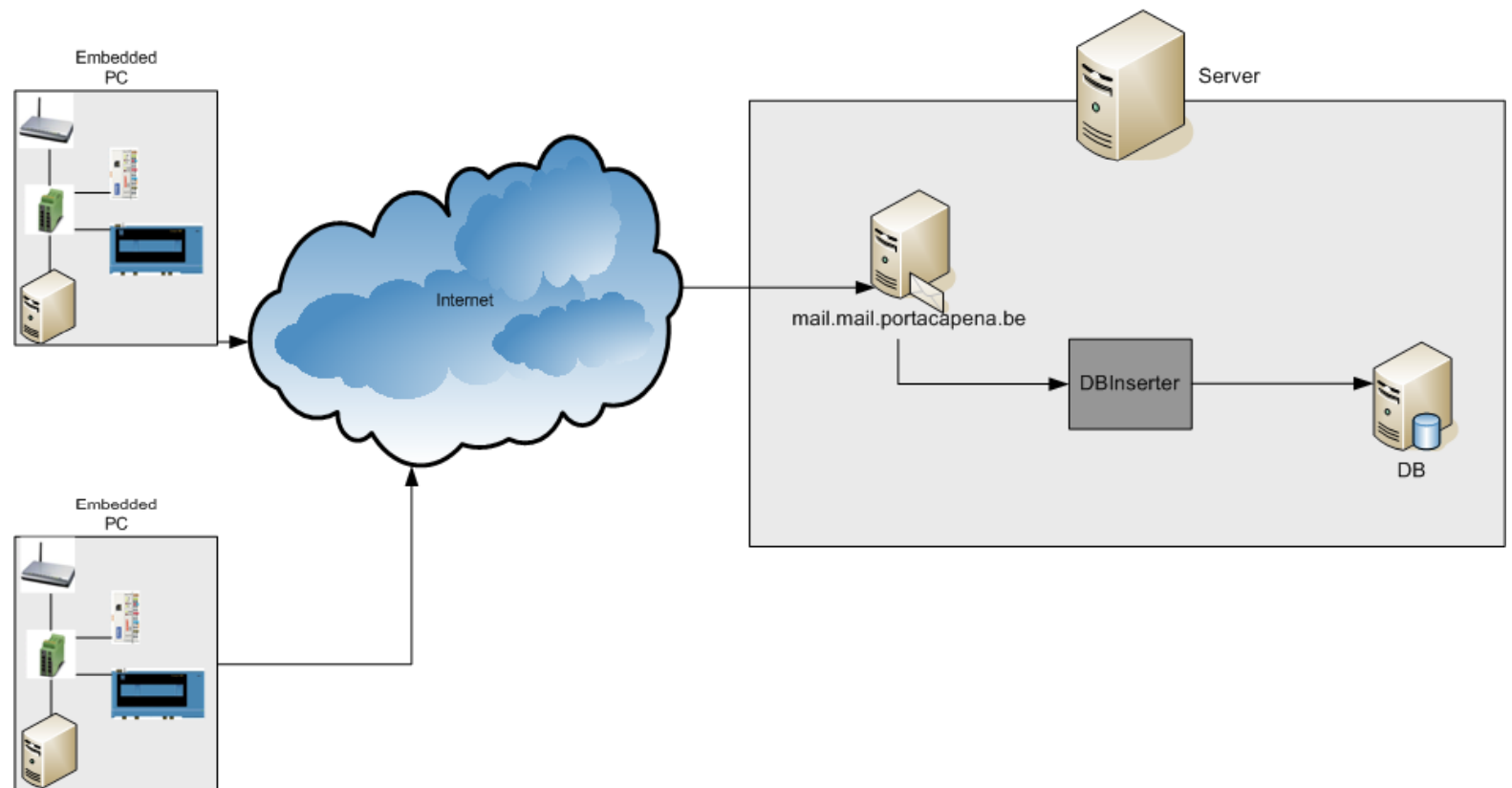
- $Br_{WKK}$  : brandstofverbruik WKK [GJ]
- $\alpha_E$  : elektrisch rendement WKK [fractie van 1]
- $\alpha_Q$  : thermisch rendement WKK [fractie van 1]
  
- $E$  : elektriciteitsvraag [GJ]
- $Q$  : warmtevraag [GJ]
  
- $Br_E$  : brandstofverbruik elektriciteitscentrale [GJ]
- $\eta_E$  : elektrisch rendement elektriciteitscentrale [fractie van 1]
  
- $Br_Q$  : brandstofverbruik ketel [GJ]
- $\eta_Q$  : thermisch rendement ketel [fractie van 1]

Bron: Informatiepakket Warmtekrachtkoppeling (VITO)



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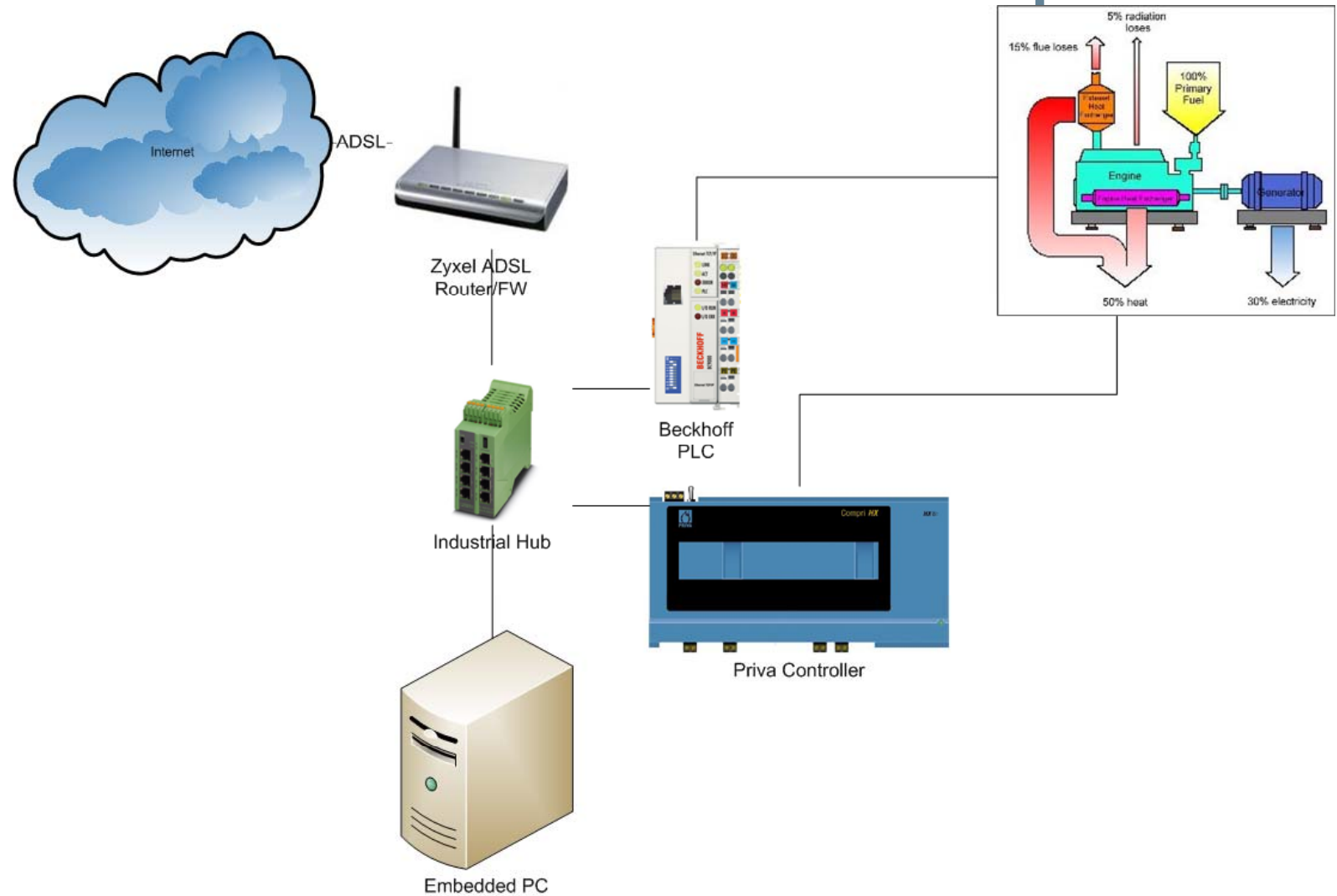
# Customer Specific Development





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# Base Station Setup





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# Base Station Screen

The image shows a screenshot of the 'Thenergo Power System v1.3.2' software interface. The window title is 'Thenergo Power System v1.3.2' and it has a menu bar with 'File', 'View', and 'Help'. The interface is divided into several sections:

**Header Information:** Location: Merksplas, Site: flex1, Company: Truyenberg, GMT Standard Time: 29-may-2008 14:12:50, Local Time: 29-may-2008 15:12:50.

**WKK 1, 2, 3, 4, 5:** Each WKK (Waste-to-Energy) unit has a control panel with the following fields:

- WKK 1:** Kleinv Vermogen: 0,0 kW; Brutovermogen: 0,0 kW; Draaiuren: 7070,0 h; Gassteler: 1392964,0 m<sup>3</sup>/h; Ureum injectie: 0,0 h; Warmtemeting: 466017,0 kWt/h.
- WKK 2:** Kleinv Vermogen: 0,0 kW; Brutovermogen: 0,0 kW; Draaiuren: 6929,0 h; Gassteler: 1412719,0 m<sup>3</sup>/h; Ureum injectie: 0,0 h; Warmtemeting: 439796,0 kWt/h.
- WKK 3:** Kleinv Vermogen: 0,0 kW; Brutovermogen: 2404566,0 kW; Draaiuren: 4463,0 h; Gassteler: 681089,0 m<sup>3</sup>/h; Ureum injectie: 0,0 h; Warmtemeting: 0,0 kWt/h.
- WKK 4:** Kleinv Vermogen: 0,0 kW; Brutovermogen: 0,0 kW; Draaiuren: 0,0 h; Gassteler: 1172819,0 m<sup>3</sup>/h; Ureum injectie: 0,0 h; Warmtemeting: 5472500,0 kWt/h.
- WKK 5:** Kleinv Vermogen: 0,0 kW; Brutovermogen: 1209748,0 kW; Draaiuren: 0,0 h; Gassteler: 341091,0 m<sup>3</sup>/h; Ureum injectie: 0,0 h; Warmtemeting: 1701033,0 kWt/h.

**TOTALS:**

- Elektriciteitsmeter totaal import: 171920
- Elektriciteitsmeter eigen bedrijf 1A wkk: 415962 kWu
- Elektriciteitsmeter eigen bedrijf 1B wkk: 85768 kWu
- Gassteler kabel 1A: 39157,0 m<sup>3</sup>/h
- Gassteler kabel 1B: 90,0 m<sup>3</sup>/h
- Warmtemeting afdeling 7-8: 0,0 kWt/h
- Elektriciteitsmeter totaal export: 15692696 kWu
- Elektriciteitsmeter eigen kvelertj: 14568 kWu
- Elektriciteitsmeter belichting: 0 kWu
- custom 1-5: 0

**Environmental Data:**

- Buitemtemperatuur [°C]: 20,1
- Buffer Tank [%]: 61,5 %

**STATUS:**

- Samples Recorded: 52287 5051
- Start Time: 07-apr-2008 00:37:05
- Bechhoff PLC 1: Green
- Bechhoff PLC 2: Green
- Priva status: Green
- Logging status: Red
- Email status: Green

**Buttons:** Reset Volume, Start, Stop, Settings, Exit.

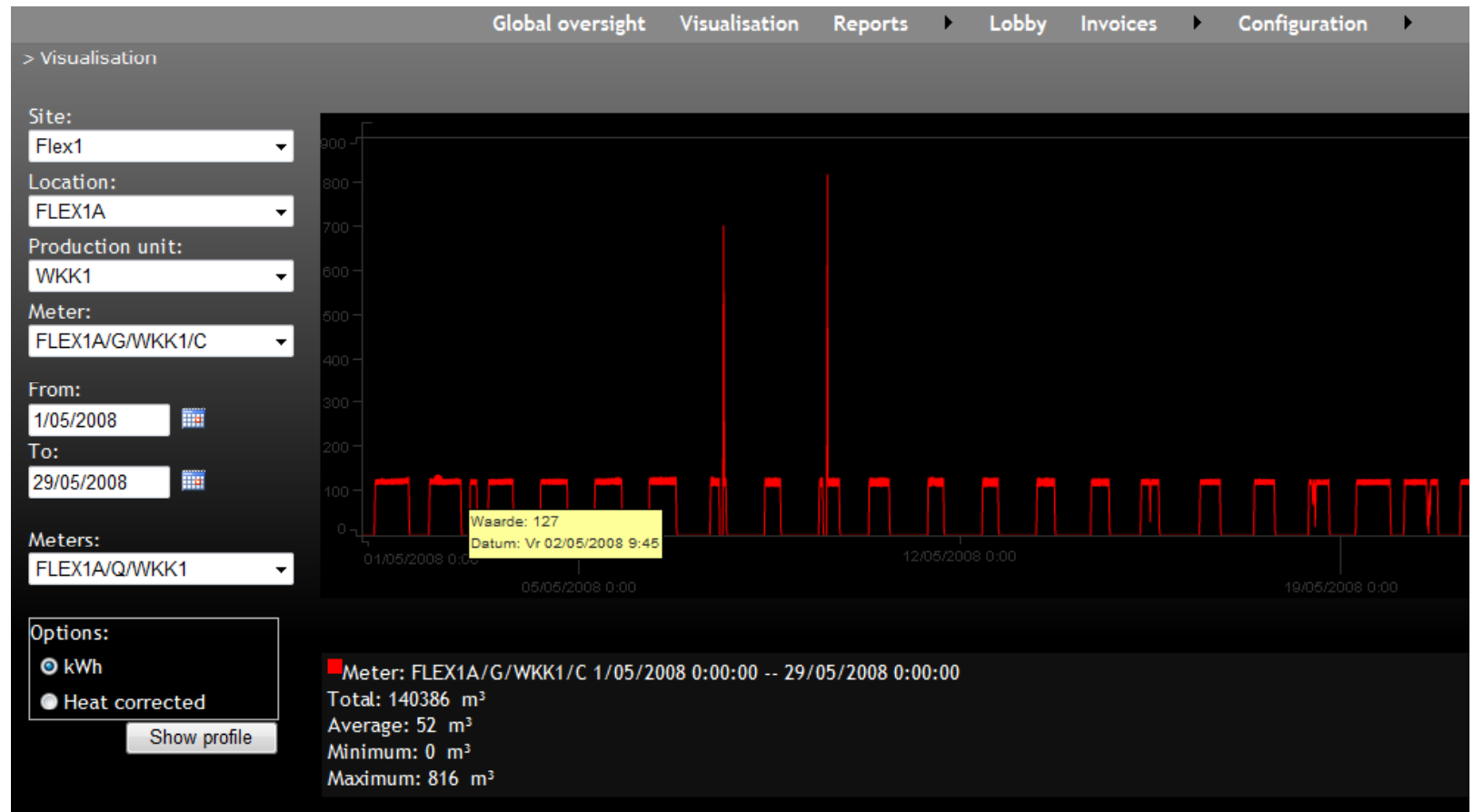
**Footer:** Application Thenergo Power System v1.3.2 started



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# Webapplication





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Global oversight   Visualisation   Reports   ▸   Lobby   Invoices

> Reports > E Meters

Site:  
Flex1

Location:  
choose location:

Production unit:  
choose production unit:

Year:  
2008

E Meters:

- FLEX1A/E/TOTAAL\_IMP
- FLEX1A/E/TOTAAL\_EXP
- FLEX1A/E/H-WKK
- FLEX1A/E/EB-KWEKERIJ
- FLEX1A/E/WKK1/B1
- FLEX1A/E/WKK2/B1
- FLEX1A/E/WKK3/N
- FLEX1A/Q/AFD7-8
- FLEX1B/E/WKK1/B1
- FLEX1B/E/WKK2/N
- FLEX1B/E/H-WKK
- Flex1a/E/Belichting onderstation B
- Flex1a/E/Belichting onderstation C

Month	Week no	Date	Electricity kWh
december	1	31/12/2007	0,00 kWh
januari	2	07/01/2008	0,00 kWh
januari	3	14/01/2008	0,00 kWh
januari	4	21/01/2008	3.278,00 kWh
januari	5	28/01/2008	3.562,00 kWh
februari	6	04/02/2008	2.656,00 kWh
februari	7	11/02/2008	2.516,00 kWh
februari	8	18/02/2008	146,00 kWh
februari	9	25/02/2008	98,00 kWh
maart	10	03/03/2008	51,00 kWh
maart	11	10/03/2008	70,00 kWh
maart	12	17/03/2008	68,00 kWh
maart	13	24/03/2008	535,00 kWh
maart	14	31/03/2008	912,00 kWh
april	15	07/04/2008	0,00 kWh
april	16	14/04/2008	1.768,00 kWh
april	17	21/04/2008	7.427,00 kWh
april	18	28/04/2008	7.668,00 kWh
mei	19	05/05/2008	9.988,00 kWh
mei	20	12/05/2008	8.962,00 kWh

Electricity kWh ▾

Week no	Electricity kWh
1	0
2	0
3	0
4	3278
5	3562
6	2656
7	2516
8	146
9	98
10	51
11	70
12	68
13	535
14	912
15	0
16	1768
17	7427
18	7668
19	9988
20	8962
21	0
22	0
23	0
24	0
25	0
26	0
27	0

> Screen

> Excel



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# Contact

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2440 Geel

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**Fax +32 (14) 57 96 51**

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